

**Notice of Allowability**

Application No.

10/601,255

Examiner

Jonas N. Strickland

Applicant(s)

MOWERY-EVANS ET AL.

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on 8/26/04.
2. ☒ The allowed claim(s) is/are claims 1-17.
3. ☒ The drawings filed on 19 June 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

***Allowable Subject Matter***

1. Claims 1-17 are allowed.
2. The following is an examiner's statement of reasons for allowance: The instant application is allowable over the cited prior art, because the cited prior art fails to disclose a method for catalytically reducing nitrogen oxide compounds, comprising exposing a gas comprising nitrogen oxides, consisting of NO and NO<sub>2</sub>, in the presence of NH<sub>3</sub> to a catalyst comprising an active component selected from CuO, Mn, and oxides of Mn on a hydrous metal oxide support.

Smirniotis et al. ("Low Temperature Selective Catalytic Reduction of NO with NH<sub>3</sub>..") discloses a process for treating nitrogen oxides by using a hydrous metal oxide support, such as Hombikat TiO<sub>2</sub> for NO reduction to produce a 100% yield of nitrogen gas (p. 2480, col. 1). Smirniotis et al. continues to disclose wherein the active component comprises Mn (p. 2480, col. 2). Smirniotis et al. continues to disclose wherein it is known in the art to use mixed metal oxide catalysts such as MoO<sub>3</sub>, CuO, and MnO<sub>x</sub> supported on TiO<sub>2</sub> are useful in SCR processes for reducing nitrogen oxides (p. 2480, col. 1). The gas may also comprise oxygen and water vapor (p. 2481, col. 1). The reduction of nitrogen oxides occurs at 180°C (see page 2481, col. 1). The conversion to nitrogen is 100% (see Table 1, Example 3). The oxides of Mn are comprised of MnO<sub>2</sub> (see Table 1, example 3). However, Hombikat TiO<sub>2</sub>, is not the same support material as the hydrous metal oxide supports as instantly claimed. Applicant provides support in the specification disclosing the differences between the Hombikat TiO<sub>2</sub> support material and the hydrous metal oxide.

Dosch et al. (US Patent 5,461,022) teaches thin film hydrous metal oxide catalysts. Dosch et al. continues to teach wherein these catalysts are useful for the reduction of nitrogen oxides (col. 2, lines 53-54). The metal oxide is preferably titanium (col. 3, lines 22-40). Dosch et al. teaches having Mo as a promoter for the catalyst and loading 1% of Mo onto the hydrous titanium oxide catalyst (col. 3, lines 45-50 and col. 8, line 15). However, Dosch et al. does not teach a catalyst comprised of CuO, Mn, and oxides of Mn.

Gardner et al. (US Patent 6,165,934) teaches a material and system for the catalytic reduction of nitrogen oxides in an exhaust gas stream wherein the catalyst is comprised of hydrous titanium oxide with a copper promoter compound (see abstract). Gardner et al. continues to teach wherein the catalyst includes silica, which allows the catalyst to be stabilized for temperatures up to 1000°C. Gardner et al. also teaches wherein the catalyst system is applied to a ceramic substrate, such as beads or a monolith, such as a cordierite honeycomb monolith (col. 1, lines 48-56). Gardner et al. does not teach wherein the catalytic active material is CuO, Mn, or Mn oxides, but rather noble metals are used as the catalytic active metals.


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonas N. Strickland whose telephone number is 571-272-1359. The examiner can normally be reached on M-TH, 7:30-5:00, off 1st Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jonas N. Strickland  
November 3, 2004

  
STEVEN BOS  
PRIMARY EXAMINER  
GROUP 1100